



City of Huntington Beach  
Department of Planning & Building  
**2013 California Energy Code**

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New Residential Buildings with less than four habitable stories, for which a permit application is accepted on or after July 1<sup>st</sup>, 2014, shall conform to the requirements of Title 24 Building Energy Standards. The use of a consultant, specializing in T24 energy design, is recommended to prepare the energy analysis and forms necessary to show compliance with the State's requirements.

### COMPLIANCE METHODS

There are two (2) acceptable compliance methods:

1. Performance method - Using California Energy Commission approved computer programs.
2. Prescriptive method - Using State approved alternate component packages indicated below.

### TITLE 24, PART 6, CODE SECTION REFERENCES

- General Provision.....Section 100
- Mandatory requirements.....Section 110.1 through 110.10 and 150
- Performance methods.....Section 150.1(a) through (b)
- Prescriptive methods.....Section 150.1(c)
- Energy Efficiency Standards for Additions and Alterations.....Sections 150.2 (a) through (c)

### REQUIRE DOCUMENTATION

Mandatory Measures: Add mandatory notes per Title 24, Section 110-110.10 and 150 or completed (MF-1R) to the plans.

### PERFORMANCE METHODS

1. Submit computer analysis by State approved software package.
2. Certificate of Compliance per Title 24, Part 1, Article 1, Section 10-103(a) to the plans (CF-1R)
3. Add mandatory energy conservation features with applicable boxes check marked to the plans (MF-1R).
4. Show insulation envelope with R-values called out on the cross-section; show glazing U-values on the door/window schedules, identify thermal mass on the plans corresponding to CF-1R.

### PRESCRIPTIVE METHODS

1. Show compliance with the prescriptive package on the plans.
2. Certificate of Compliance per Title 24, Part 1, Article 1, Section 10-103(a) on (CF-1R).
3. Add mandatory energy conservation features with applicable boxes checked marked to the plans (MF-1R).
4. Show insulation envelope with R-value called out on the cross-section; show glazing U-values on the door/window schedules, identify thermal mass on the plans corresponding to CF-1R.

### HELPFUL STATE PUBLICATIONS

- CEC-400-2013-001-SD-REV Building Energy Efficiency Standards for Residential and Non-Residential Building\* - CEC-400-2013-001-SD.
- \*Available on-line from: California Energy Commission, Media and Public Communication Office, 1516 9<sup>th</sup> Street, MS #29, Sacramento, CA 95814-5512;  
<http://www.energy.ca.gov/title24/2013standards/index.html>. Phone: (916) 654 – 5200.

### ASHRAE HANDBOOK – 2013 FUNDAMENTALS\*\*

\*\*Available from technical bookstores or order from: ASHRAE, 1791 Tulie Circle N.E., Atlanta, GA 30329.  
Phone: 404 / 636 – 8400.

## Basic and Alternate Component Compliance Package for New Residential Buildings in Climate Zone 6

	Package A – Standard Building Design
	Climate Zone
Components	6
<b>Building Envelope</b> Insulation Minimums <sup>1</sup> Roofs/Ceilings 2x4 Wood-frame walls <sup>2</sup> Above Grade mass walls = Interior <sup>3</sup> Above Grade mass walls = Exterior <sup>3</sup> Below grade walls = Interior <sup>3</sup> Below Grade walls = Exterior <sup>3</sup> Slab Floor, Perimeter Raised Floors Concrete raised floors Radiant Barrier	R-30 (U 0.031) R-15+4 or R-13+5 (U 0.065) R-13 (U 0.070) R-8.0 (U 0.125) R-13.0 (U 0.070) R-5.0 (U 0.200) NR R-19 (U 0.037) R-0 (U 0.269) NR
<b>Fenestration</b> Maximum U-Factor <sup>4</sup> Maximum Solar Heat Gain Coefficient (SHGC) <sup>5</sup> Maximum Total Area Maximum West Facing Area	0.32 0.25 20% 5%
<b>Roofing</b> Low-Sloped Aged Solar Reflectance Thermal Emittance Steep-Slope (Less Than 5lb/ft <sup>2</sup> ) Aged Solar Reflectance Thermal Emittance	NR NR NR NR
<b>HVAC SYSTEM<sup>8</sup></b> Space Heating System Electric Resistance Allowed: If Gas, AFUE = If Heat Pump: HSPF <sup>6,7</sup> = Space Cooling System SEER = Refrigerant charge verification or charge indicator display Whole House Fan <sup>7</sup> Central Forced Air Handlers <sup>8</sup> Central Fan Integrated Ventilation System Fan Efficacy Ducts Duct Insulation	NO MIN MIN MIN NR NR NR REQ R-6
<b>Domestic Water Heating Type</b> All Buildings	System shall meet Section 150.1(c) <sup>8</sup>

### Footnotes to Prescriptive Packages (for Code Reference, See Publication CEC-400-2013-001-SD-REV)

- 1 The U-factor / R-values shown for ceiling, wall and raised floor insulation are for **WOOD-FRAMED CONSTRUCTION** with insulation installed between the framing members. For alternative construction assemblies, see Section 150.1(c)1A, B and C.
- 2 U-factors can be met by cavity insulation alone or with continuous insulation alone, or with both cavity and continuous insulation that results in a U-factor equal to or less than the U-factor shown. "R15+4" means R-15 cavity insulation plus R-4 continuous insulation sheathing. Any combination of cavity insulation and/or continuous insulation that results in a U-factor equal to or less than 0.065 is allowed, such as "R-13+5."
- 3 Mass wall has a thermal heat capacity greater than or equal to 7.0 Btu/h-ft<sup>2</sup>. Below grade "interior" denotes insulation installed on the inside surface of the wall.
- 4 The installed fenestration products shall meet the requirements of Section 150.1(c)3.
- 5 The installed fenestration products shall meet the requirements of Section 150.1(c)4.
- 6 HSPF means "heating seasonal performance factor."
- 7 When whole house fans are required (REQ), only those whole house fans that are listed in the Appliance Efficiency Directory may be installed. Compliance requires installation of one or more WHF's whose total airflow CFM is capable of meeting or exceeding a minimum 2 cfm/square foot of conditioned floor area per Section 150.1(c) 12.
- 8 A supplemental heating unit may be installed in a space served directly or indirectly by a primary heating system, provided that the unit thermal capacity does not exceed 2 kilowatts or 7,000Btu/hr and is controlled by a time-limiting device not exceeding 30 minutes.

## TYPICAL DEFINITIONS FOR TITILE 24, PART 6 CALIFORNIA ENERGY CODE

### **Certificate of Compliance – Residential New Construction (CF-1R)**

The CF-1R summarizes the minimum energy performance specifications needed for new construction compliance, including HVAC capacity and the result of the heating and cooling load calculations need to be attached. The Standards require that a certificate of compliance be included on the plans. California Energy Code (CEC) approved Performance ACM software automatically generates CF-1R forms, which vary in some respect from the prescriptive CF-1R forms.

### **Mandatory Measures List (MF-1R)**

This document is applicable for both prescriptive and performance compliance. This reference list needs to be part of the building plans to help builders and inspectors reference applicable mandatory measures in the Standards.

### **Prescriptive Package**

The simplest approach in which each individual component of the proposed building must meet a prescribed minimum energy requirement. The prescriptive approach is the least flexible yet simplest compliance path. It is simple because an applicant need only show that a building meets each minimum or maximum level prescribed in the set of requirements contained in a package.

### **Performance Package**

The use of Energy Commission-approved computer methods provides the most flexibility and accuracy in calculating energy use. Detailed accounting of energy *trade-offs* between measures is possible with this approach. While this approach requires the most effort, it also provides the greatest flexibility. The computer program automatically calculates the energy budget for space conditioning. The budget is determined from the standard design, a version of the building, which is upgraded or downgraded to achieve minimum compliance with the prescriptive Package D conservation features.

### **Fenestration (Glazing Area)**

Fenestration area is defined as the area of all fenestration products (i.e., windows, skylights and glass doors) in exterior openings, including the sash or frame area. The nominal area (from nominal dimensions such as 4o4o) or rough opening is also acceptable. For details on calculating fenestration area for glass doors, see *Exterior Door*. Where the term "glazing area" is used in the standards it means the entire fenestration area, not just the area of glazing, unless stated otherwise.

### **Exterior Door**

An exterior door is any openable opaque surface that separates conditioned and unconditioned space. A door with one half or less of the surface area as glazing is an exterior door. A door with more than 50 percent of its surface area made up of glazing is a fenestration product.

### **Energy Efficiency Ratio (EER)**

The energy efficiency ratio (EER) is "the ratio of net cooling capacity (in Btu/hr) to total rate of electrical energy (in watts), of a cooling system under designated operating conditions, as determined using the applicable test method in the Appliance Efficiency Regulation or § 110.1 and 110.2."

**Seasonal Energy Efficiency Ratio (SEER)**

The total cooling of a central air conditioner or heat pump in Btu during 12 months divided by the total electric energy input in watt-hours during the same period.

**Home Energy Rating (HERS)**

A home energy rating involves an analysis of a home's construction plans and onsite inspections. Based on the home's plans, the Home Energy Rater uses an energy efficiency software package to perform an energy analysis of the home's design. This analysis yields a projected, pre-construction HERS Index. Upon completion of the plan review, the rater will work with the builder to identify the energy efficiency improvements needed to ensure the house will meet ENERGY STAR performance guidelines. The rater then conducts onsite inspections, typically including a blower door test (to test the leakiness of the house) and a duct test (to test the leakiness of the ducts). Results of these tests, along with inputs derived from the plan review, are used to generate the HERS Index score for the home.

**HERS Index**

The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home.

Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Thus a home with a HERS Index of 85 is 15% more energy efficient than the HERS Reference Home and a home with a HERS Index of 80 is 20% more energy efficient.